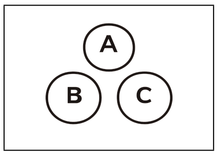
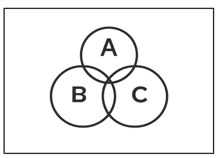
B Expected Value & Variance Binomial Distribution B



$n = 6$

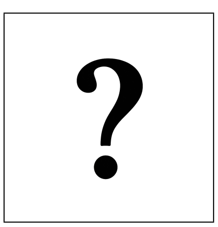
$p = \frac{1}{2}$



$E[X] = np = 6 \cdot \frac{1}{2} = \boxed{3}$

$\text{Var}(X) = np(1-p) = 3 \cdot \frac{1}{2} = \boxed{\frac{3}{2}}$

$$E[X^2] = \text{Var}(X) + \left(E[X]\right)^2$$
$$E[X^2] = \frac{3}{2} + 3^2$$
$$E[X^2] = \frac{3}{2} + 9$$
$$E[X^2] = \boxed{\frac{21}{2}}$$



$n = 1000$

$p = 0.4$

B Expected Value & Variance Binomial Distribution B

$n = 1000$
$p = 0.4$

$$\mu = E[X] = np = 1000 \times 0.4 = \boxed{400}$$

$$\sigma = \sqrt{\mathrm{Var}(X)} = \sqrt{np(1-p)} = \sqrt{1000 \times 0.4 \times 0.6} = \sqrt{240} \approx \boxed{15.49}$$